

Application No.: 09/521,663Docket No.: 1509-106Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

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1. (previously presented): A method of printing a document from a computer with a printer, the printer having a printer processor, the method comprising:
- generating, in the computer instruction, data to enable the printer to print the document;
 - generating, in the computer resource, information indicative of printer processor resources required by the printer at different stages of printing the document;
 - sending the instruction data and the resource information from the computer to the printer;
 - scheduling printer processor resources for the different stages of printing the document in accordance with the resource information; and
 - printing the document with the printer processor resources as scheduled.
2. (original): A method as claimed in claim 1, wherein the instruction data is provided as page description language and/or job control language.
3. (previously presented): A method as claimed in claim 2, wherein the resource information is provided as annotation to the page description language and/or job control language, and wherein the method comprises after the step of generating resource information, the step of annotating the instruction data with the resource information.

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4. (original): A method as claimed in claim 3, wherein a common information processing structure carries out the steps of generating the instruction data, generating the resource information, and annotating the instruction data with the resource information.

5. (previously presented): A method as claimed in claim 4, wherein the common information processing structure includes a printer driver.

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6. (original): A method as claimed in claim 3, wherein a first information processing structure carries out the step of generating the instruction data, and a second information processing structure carries out the steps of generating the resource information and annotating the instruction data with the resource information.

7. (original): A method as claimed in claim 6, wherein said second information structure is located in an information path for instruction data from the first information processing structure to the printer.

8. (previously presented): A method as claimed in claim 7, wherein said second information structure includes a print spooler.

9. (previously presented): A method as claimed in claim 7, wherein said second information structure includes a discrete structure receiving the instruction data as input and providing instruction data annotated with the resource information as output.

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10. (previously presented): A method as claimed in claim 3, wherein the annotation is provided in the form of comments in the page description language and/or job control language, and wherein the method comprises between the steps of sending the instruction data and the resource information from the computer to the printer and scheduling printer processor resources a further step of filtering the comments in the page description language and/or job control language to extract the resource information.

11. (original): A method as claimed in claim 10, wherein the resource information is provided as comments in page headers of the page description language.

C (12. (original): A method as claimed in claim 11, wherein the resource information is provided as comments in the page header to the first page of the document.

13. (original): A method as claimed in claim 11, wherein the resource information is provided incrementally in a plurality of page headers.

14. (previously presented): A method as claimed in claim 13, wherein page headers include resource information for the page to which they relate or to later pages in the document if such resource information has not already been provided in previous page headers.

15. (previously presented): A method as claimed in claim 11, wherein no

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resource information is provided as a comment to the page header of the first page.

16. (original): A method as claimed in claim 15, wherein the step of generating resource information does not include generation of resource information for the first page of the document.

17. (original): A printer adapted to print a document from instruction data and resource information, the printer having a printer processor, such that the printer processor is adapted to schedule its resources for the different stages of printing the document from the instruction data in accordance with the resource information, and to print the document from the instruction data with the printer processor resources as scheduled.

18. (previously presented): A printer as claimed in claim 17, wherein the instruction data is adapted to be provided as page description language and/or job control language.

19. (previously presented): A printer as claimed in claim 18, wherein the resource information is adapted to be provided as annotation to the page description language and/or job control language.

20. (previously presented): A printer as claimed in claim 19, wherein the annotation is adapted to be provided in the form of comments in the page description language and/or job control language, and wherein the printer processor is adapted to filter the comments

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in the page description language and/or job control language to extract the resource information.

21. (original): A computer programmed to provide a document for printing by a printer, the programmed computer having:

a first information processing structure to generate instruction data to enable a printer to print the document;

a second information processing structure resource to generate resource information indicative of printer processor resources required by the printer at different stages of printing the document; and

an information path such that the instruction data and the resource information can be sent from the computer to a printer.

22. (previously presented): A computer as claimed in claim 21, wherein the first information processing structure is arranged for generating instruction data as page description language and/or job control language.

23. (previously presented): A computer as claimed in claim 22, wherein the second information processing structure generates resource information as annotation to the page description language and/or job control language, and is arranged to annotate the instruction data with the resource information.

24. (original): A computer as claimed in claim 23, wherein the first information processing structure and the second information processing structure are

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combined in a common information processing structure.

25. (previously presented): A computer as claimed in claim 24, wherein the common information processing structure includes a printer driver.

26. (original): A computer as claimed in claim 23, wherein said second information structure is located in the information path between the first information processing structure and a printer.

27. (previously presented): A computer as claimed in claim 26, wherein said second information structure includes a print spooler.

28. (previously presented): A computer as claimed in claim 26, wherein said second information structure includes a discrete structure for receiving the instruction data as input and for providing instruction data annotated with the resource information as output.

29. (previously presented): A computer as claimed in claim 23, wherein the second information structure is adapted such that the annotation is provided in the form of comments in the page description language and/or job control language.

30. (original): A computer as claimed in claim 29, wherein the second information structure is adapted such that the resource information is provided as comments in page headers of the page description language.

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31. (original): A computer as claimed in claim 30, wherein the second information structure is adapted such that the resource information is provided as comments in the page header to the first page of the document.

32. (original): A computer as claimed in claim 30, wherein the second information structure is adapted such that the resource information is provided incrementally in a plurality of page headers.

C. 33. (previously presented): A computer as claimed in claim 30, wherein the second information structure is adapted such that no resource information is provided as a comment to the page header of the first page.

34. (original): A computer as claimed in claim 33, wherein the second information structure is adapted so as not to generate resource information for the first page of the document.

35. (previously presented): A computer system comprising a printer adapted to print a document from instruction data and resource information, the printer having a printer processor, such that the printer processor is adapted to schedule its resources for the different stages of printing the document from the instruction data in accordance with the resource information, and to print the document from the instruction data with the printer processor resources as scheduled; a computer programmed to provide a document for printing by a printer,

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the programmed computer having a first information processing structure to generate instruction data to enable a printer to print the document, a second information processing structure resource to generate resource information indicative of printer processor resources required by the printer at different stages of printing the document, and an information path such that the instruction data and the resource information can be sent from the computer to a printer; and a communication path adapted to carry information from the computer to the printer.

36. (previously presented): An article of manufacture comprising a program storage medium having computer readable program code embodied therein for causing a document to be provided in a form for printing by a printer, the computer readable program code means in said article of manufacture including:

computer readable program code for causing a computer to generate instruction data to enable a printer to print the document, wherein the instruction data is provided as page description language and/or job control language; and

computer readable program code for causing the computer to generate resource information indicative of printer processor resources required by the printer at different stages of printing the document, and to annotate the instruction data with the resource information, thereby enabling the annotated instruction data to be provided for printing by the printer.

37. (currently amended): An article of manufacture comprising a program storage medium having computer readable program code embodied therein for enhancing information enabling a document to be provided for printing by a printer, said information being provided as instruction data in the form of page description language and/or job control

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language, the computer readable program code in said article of manufacture comprising computer readable program code for causing the computer to generate resource information indicative of printer processor resources required by the printer at different stages of printing the document, and to annotate the instruction data to be ~~provide~~provided with the resource information, for thereby enabling the annotated instruction data for printing by the printer.

38. (previously presented): A computer system as claimed in claim 1 wherein the scheduling step includes changing the order of operation of tasks related to printing a document segment.

39. (previously presented): A computer system as claimed in claim 38 wherein the document segment includes a page of the document.

40. (previously presented): A computer system as claimed in claim 17 wherein the processor is arranged such that the schedule of resources includes changing the order of operation of tasks related to printing a document segment.

41. (previously presented): A computer system as claimed in claim 41 wherein the document segment includes a page of the document.

42. (previously presented): A computer system as claimed in claim 21 wherein the printer processor is arranged such that the resource information enables a change in the order of operation tasks relating to printing a document segment.

43. (previously presented): A computer system as claimed in claim 42 wherein the document segment includes a page of the document.

44. (previously presented): A computer system as claimed in claim 35 wherein the printer processor is arranged such that the scheduled resources enables a change in the order of operation tasks relating to printing a document segment.

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45. (previously presented): A computer system as claimed in claim 44 wherein the document segment includes a page of the document.

46. (previously presented): A computer system as claimed in claim 36 wherein the program code for causing the computer to generate resource information is arranged for causing the resource information to change the order of operation of tasks relating to printing a document segment.

47. (previously presented): A computer system as claimed in claim 46 wherein the document segment includes a page of the document.

48. (previously presented): A computer system as claimed in claim 37 wherein the program code for causing the computer to generate resource information is arranged for causing the resource information to change the order of operation of tasks relating to printing a document segment.

49. (previously presented): A computer system as claimed in claim 48 wherein the document segment includes a page of the document.

50. (previously presented): A computer system as claimed in claim 1 wherein the scheduling step includes scheduling the printing of later pages prior to the execution of tasks related to the printing of earlier pages.

51 (previously presented): A computer system as claimed in claim 17 wherein the printer processor is arranged for causing the printing of later pages prior to the execution of tasks related to the printing of earlier pages.

52 (New): In combination, a computer and a printer having a processor, the computer being arranged for supplying to the printer processor (a) instruction data and (b) resource information indicative of printer processor resources required by the printer at

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different document printing stages,

the printer processor being arranged to schedule printer processor resources for the different document printing stages in accordance with the resource information, and cause the printer to print the document with the printer processor resources as scheduled,

the computer printer processor being arranged to provide to the printer processor the resource information as comments in page description language located in page headers for enabling the printer processor to learn in advance of receiving pages of a job, how the printer resources are to be scheduled to prevent printer stalls.

53 (New): The combination of claim 52 wherein the instruction data includes page description language.

54 (New): A method of operating a printer with a processor comprising supplying to the printer processor (a) instruction data and (b) resource information indicative of printer processor resources required by the printer at different document printing stages,

the printer processor scheduling printer processor resources for the different document printing stages in accordance with the resource information, and

causing the printer to print the document with the printer processor resources as scheduled, causing the computer printer processor to provide to provide to the printer processor the resource information as comments in page description language located in page headers so the printer processor learns in advance of receiving pages of a job, how the printer resources are to be scheduled to prevent printer stalls.

55 (New): The method claim 54 wherein the instruction data includes page description language.